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KENNAMETAL INC.  
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EXAMINER

ADDISU, SARA

ART UNIT PAPER NUMBER

3722

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/1/06 has been entered.

Claims 3, 5, 8, 17, 25 and 26 have been cancelled. New claims 29-34 have been added. Currently, claims 1, 2, 4, 6, 7, 13, 14, 18-20, 23, 24, 27-34 are pending in this application.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 8/28/01. It is noted, however, that applicant has not filed a certified copy of the 101 42 049.8 application as required by 35 U.S.C. 119(b).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23, 24, 27 and 28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- Claims 23, 24, 27 and 28 recite "organic adhesive" and "adhesive comprising dimethacrylate ester". Further review of the Specification/drawings do not mention this claimed subject matter.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 14, recites "The cutting insert according to claim 1, wherein the maximum diameter of said at least one cutting body is in the range of  $4 + 0.05$  mm to  $10 + 0.05$  mm". Claim 14 depends from claim 1, which claims "...cutting body having a geometric shape". Claim 1 does not define the geometric shape being one that has a diameter, the term "geometric shape" encompasses shapes such as square, triangle ....etc.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385).

Lagerberg teaches an indexable insert (13) having an insert body (23) with a working hard material circular wafer (24: Figure 3) preferably consisting of ceramics (Figures 1, 3 & 6, and Col. 2, lines 27-31) with recess for receiving the working hard material circular wafer (24). Regarding the limitation "said at least one cutting body being joined to said base body by an adhesive configured to withstand high temperatures generated during use of the cutting insert in recessing or copy turning metal workpieces", Lagerberg teaches the wafer (24) being secured to the body (23) preferably through welding or soldering ('606, col. 2, lines 30-33). Examiner points out that Dictionary.com defines "adhesive" as "a substance that causes something to adhere", therefore Lagerberg's teaches the claimed subject matter.

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However, Lagerberg is silent about the material used for the base body of the insert (i.e. doesn't teach cemented carbide body).

Komanduri teaches cutting tools having a thin diamond/CBN layer (for the cutting portion) and cemented carbide backing (to provide the support base) ('385, Col. 1, lines 34-36 and 58-63). Komanduri also teaches the substrate structure can have any number of desired shapes and also has a recess for receiving said layer. ('385, Col. 2, line 66 to Col. 4, line 16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lagerberg's invention such that the base body of the insert is made of cemented carbide as taught by Komanduri because cemented carbide bodies are commercially available and are well known in the art, and have been used as substrates ('385, Col. 2, lines 36-38).

2. Claims 14 and 29, as best understood, are rejected under 35 U.S.C.

103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with a working hard material circular wafer (24: Figure 3) preferably

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consisting of ceramics with recess for receiving the working hard material circular wafer (24), as set forth in the above rejection.

However, the modified device of Lagerberg is silent about the cutting body having a maximum diameter in the range of  $4 \pm 0.05$  mm to  $10 \pm 0.05$  mm.

Lindstedt teaches a cutting insert (10) having a base body (with side surfaces 11, 12 and end surfaces 15,16) and integrally formed a cutting body (18) ('680, figures 1-4 and col. 2, lines 8-14). Lindstedt also teaches the cutting body (18) being provided with a circular cutting edge (19) with a diameter of 3-5 mm ('680, figure 2 and Col. 3, lines 7-8).

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Lagerberg discloses the claimed invention (i.e. a circular wafer/tip) except for the diameter of the cutting tip having a maximum diameter in the range of  $4 \pm 0.05$  mm to  $10 \pm 0.05$  mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the diameter of the cutting body (e.g. be in the range of  $4 \pm 0.05$  mm to  $10 \pm 0.05$  mm as taught by Lindstedt ) depending on the size of the insert and machining application, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

3. Claims 23 and 24, as best understood, are rejected under 35 U.S.C.

103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606)

in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680) and Shouse (USP 5,868,530).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with a working hard material circular wafer (24: Figure 3) preferably consisting of ceramics with recess for receiving the working hard material circular wafer (24), as set forth in the above rejection. Furthermore, as mentioned above, Lagerberg teaches wafers (tip) being attached to the body through welding or soldering (Note: Dictionary.com defines "adhesive" as "a substance that causes something to adhere", therefore Lagerberg's teaches the claimed subject matter of claim 1).

However, the modified device of Lagerberg fails to teach the adhesive comprising an organic adhesive dimethacrylate ester.

Shouse teaches an insert having a base body (10) and cutting body (50) ('530, figure 1). Shouse also teaches typical cutting tools comprise a cutting tip of hard material such as diamond or carborundum detachably secured to a cutting tip support, commonly, the cutting tip is secured directly to the support by adhesive or a bolt ('530, col. 1, lines 19-23). With respect to the adhesive comprising an organic adhesive or dimethacrylate ester, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any appropriate adhesive, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Applicant should further note that Specification gives no criticality to the claimed



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limitation (also see 112, 1<sup>st</sup> paragraph rejection above for the introduction of new matter regarding the claimed subject matters of claims 23 and 24).

4. Claims 2 and 4, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680) and Shouse (USP 5,868,530) and Parker (U.S. Patent No. 4,552,491).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with recess for receiving a working hard material circular wafer (24), as set forth in the above rejection.

However, the modified device of Lagerberg fails to teach the cutting body having a perpendicular circular truncated cone shape with one end surface being smaller in diameter than opposite end surface.

Parker teaches an insert having a (perpendicular) truncated cone-shape with the larger part of the diameter on the top planar end (14) and the side wall intersecting with the top surface to form circumferential cutting edge ('491, Figures 1 & 2). Furthermore, Parker teaches cylindrical wall (18) of the insert tapering to provide relief (clearance)

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angle (B) that is in the range of 4-10 degrees but preferably at 7 degrees ('491, Col. 3, lines 7-8 & 17-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lagerberg's invention such that the circular shaped wafers (tips) are replaced by a perpendicular circular truncated cone shape with one end surface being smaller in diameter than opposite end surface as taught by Parker because Lagerberg teaches that the shape of the wafer (tip) may vary depending on the type of machining wanted ('491, Col. 2, lines 33-35).

5. Claims 6 and 7, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680) and Shouse (USP 5,868,530) and Parker (U.S. Patent No. 4,552,491) and (European Publication No. 0552714).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with recess for receiving a working hard material circular wafer (24), as set forth in the above rejection. Furthermore, regarding claim 7, Parker teaches cylindrical wall (18) of the insert tapering to provide relief (clearance) angle (B) that is in the range of 4-10 degrees but preferably at 7 degrees ('491, Col. 3, lines 7-8 & 17-20).

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Regarding claim 6, the modified device of Lagerberg teaches teaches the claimed invention, a cutting insert having a circular wafer (tip) where the exposed cutting edge has a partial circle shape, except for the specific angle of the partial circle. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the partial circle angle such that is 200 degrees but not more than 230 degrees, to have control of the flow of the chips at all times, as evidenced by (European Publication No. 0552714, Col. 2, lines 40-47), because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Applicant should further note that Specification gives no criticality or unexpected results to the claimed limitation (see Page 8, lines 18-19 and page 12, lines 1-6).

6. Claim 13, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680) and Shouse (USP 5,868,530), Parker (U.S. Patent No. 4,552,491), (European Publication No. 0552714) and Morsch (U.S. Pub. No. 2002/0131832).

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The modified device of Lagerberg teaches a cutting insert as set forth in the above rejection.

However, the modified device of Lagerberg fails to teach one groove, defined by raised portions on either side, extending transversely to the longitudinal axis of the insert.

Morsch teaches a cutting insert (510: figure 23) having a cemented carbide body ('832, Page 2, paragraph 38, lines 1-2) with recess (575) for receiving U-shaped tip (cutting body) (585). Morsch also teaches the tip having a top and front wall that intersect to form partial circle cutting edge ('832, Page 1, paragraph 12, lines 3-4). Furthermore, Morsch teaches clamping surface (598) having one groove, defined by raised portions on either side, extending transversely to the longitudinal axis of the insert (see figure 23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lagerberg's invention such that the insert is secured by a clamp as taught by Morsch, since it is well known in the art to secure an insert using any number of different configurations, whether it be a hold down screw or a clamp (2002/0131832, Page 4, paragraph 75).

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Wiman et al. (U.S. Patent No. 6,217,263).

The modified device of Lagerberg teaches an insert as set forth in the above rejection. Regarding the limitation "said at least one cutting body being joined to said base body by an adhesive configured to withstand high temperatures generated during use of the cutting insert in recessing or copy turning metal workpieces", Lagerberg teaches the wafer (24) being secured to the body (23) preferably through welding or soldering ('606, col. 2, lines 30-33). Examiner points out that Dictionary.com defines "adhesive" as "a substance that causes something to adhere", therefore Lagerberg's teaches the claimed subject matter.

However, the modified device of Lagerberg fails to teach the use of the insert for copy-turning a workpiece.

Wiman et al. teaches an indexable metal (therefore capable of being used on workpiece made of aluminum) insert, adapted for copy-turning (Abstract, lines 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize Lagerberg's insert for copy-turning a workpiece taught by Wiman et al., since it is well known in the art to use indexable inserts for application within a broad range such as copy-turning ('263, Col. 1, lines 15-18).

8. Claims 27 and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Wiman et al. (U.S. Patent No. 6,217,263) and Shouse (USP 5,868,530).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with a working hard material circular wafer (24: Figure 3) preferably consisting of ceramics with recess for receiving the working hard material circular wafer (24), as set forth in the above rejection. Regarding claim 20,

However, the modified device of Lagerberg fails to teach the adhesive comprising an organic adhesive dimethacrylate ester.

Shouse teaches an insert having a base body (10) and cutting body (50) ('530, figure 1). Shouse also teaches typical cutting tools comprise a cutting tip of hard material such as diamond or carborundum detachably secured to a cutting tip support, commonly, the cutting tip is secured directly to the support by adhesive or a bolt ('530, col. 1, lines 19-23). With respect to the adhesive comprising an organic adhesive or dimethacrylate ester, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any appropriate adhesice, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

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Applicant should further note that Specification gives no criticality to the claimed limitation (also see 112, 1<sup>st</sup> paragraph rejection above for the introduction of new matter regarding the claimed subject matters of claims 23 and 24).

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Wiman et al. (U.S. Patent No. 6,217,263), Shouse (USP 5,868,530) and Lindstedt (USP 5,205,680).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with a working hard material circular wafer (24: Figure 3) preferably consisting of ceramics with recess for receiving the working hard material circular wafer (24), as set forth in the above rejection.

However, the modified device of Lagerberg is silent about the cutting body having a maximum diameter in the range of 4 +/- 0.05 mm to 10 +/- 0.05 mm.

Lindstedt teaches a cutting insert (10) having a base body (with side surfaces 11, 12 and end surfaces 15,16) and integrally formed a cutting body (18) ('680, figures 1-4 and col. 2, lines 8-14). Lindstedt also teaches the cutting body (18) being provided with a circular cutting edge (19) with a diameter of 3-5 mm ('680, figure 2 and Col. 3, lines 7-8).

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Lagerberg discloses the claimed invention (i.e. a circular wafer/tip) except for the diameter of the cutting tip having a maximum diameter in the range of 4 +/- 0.05 mm to 10 +/- 0.05 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the diameter of the cutting body (e.g. be in the range of 4 +/- 0.05 mm to 10 +/- 0.05 mm as taught by Lindstedt ) depending on the size of the insert and machining application, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

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10. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680) Parker (U.S. Patent No. 4,552,491).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with recess for receiving a working hard material circular wafer (24), as set forth in the above rejection.

However, the modified device of Lagerberg fails to teach the cutting body having a perpendicular circular truncated cone shape.



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Parker teaches an insert having a (perpendicular) truncated cone-shape with the larger part of the diameter on the top planar end (14) and the side wall intersecting with the top surface to form circumferential cutting edge ('491, Figures 1 & 2). Furthermore, Parker teaches cylindrical wall (18) of the insert tapering to provide relief (clearance) angle (B) that is in the range of 4-10 degrees but preferably at 7 degrees ('491, Col. 3, lines 7-8 & 17-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lagerberg's invention such that the circular shaped wafers (tips) are replaced by a perpendicular circular truncated cone shape with one end surface being smaller in diameter than opposite end surface as taught by Parker because Lagerberg teaches that the shape of the wafer (tip) may vary depending on the type of machining wanted ('491, Col. 2, lines 33-35).

11. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680), Parker (U.S. Patent No. 4,552,491) and (European Publication No. 0552714).

The modified device of Lagerberg teaches an indexable insert (13) having an insert body (23) with recess for receiving a working hard material circular wafer (24), as set forth in the above rejection. Furthermore, regarding claim 33, Parker teaches cylindrical wall (18) of the insert tapering to provide relief (clearance) angle (B) that is in the range of 4-10 degrees but preferably at 7 degrees ('491, Col. 3, lines 7-8 & 17-20).

Regarding claim 32, the modified device of Lagerberg teaches teaches the claimed invention, a cutting insert having a circular wafer (tip) where the exposed cutting edge has a partial circle shape, except for the specific angle of the partial circle. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the partial circle angle such that is 200 degrees but not more than 230 degrees, to have control of the flow of the chips at all times, as evidenced by (European Publication No. 0552714, Col. 2, lines 40-47), because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Applicant should further note that Specification gives no criticality or unexpected results to the claimed limitation (see Page 8, lines 18-19 and page 12, lines 1-6).

12. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerberg (U.S. Patent No. 4,632,606) in view of Komanduri (US Patent No. 4,714,385) and further in view of Lindstedt (USP 5,205,680), Parker

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(U.S. Patent No. 4,552,491), (European Publication No. 0552714) and Morsch (U.S. Pub. No. 2002/0131832).

The modified device of Lagerberg teaches a cutting insert as set forth in the above rejection.

However, the modified device of Lagerberg fails to teach one groove, defined by raised portions on either side, extending transversely to the longitudinal axis of the insert.

Morsch teaches a cutting insert (510: figure 23) having a cemented carbide body ('832, Page 2, paragraph 38, lines 1-2) with recess (575) for receiving U-shaped tip (cutting body) (585). Morsch also teaches the tip having a top and front wall that intersect to form partial circle cutting edge ('832, Page 1, paragraph 12, lines 3-4). Furthermore, Morsch teaches clamping surface (598) having one groove, defined by raised portions on either side, extending transversely to the longitudinal axis of the insert (see figure 23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Lagerberg's invention such that the insert is secured by a clamp as taught by Morsch, since it is well known in the art to secure an insert using any number of different configurations, whether it be a hold down screw or a clamp (2002/0131832, Page 4, paragraph 75).

***Allowable Subject Matter***

13. Claim 18 is allowed.

***Response to Arguments***

Applicant's arguments filed 11/1/06 have been fully considered but they are not persuasive.

In response to Applicant's argument (page 13, 2<sup>nd</sup> paragraph) that "It should be noted that Claims 23 and 27 recite that the "adhesive comprises an organic adhesive," and Claims 24 and 28 recite that the "adhesive comprises dimethacrylate ester." It is respectfully submitted that the prior art of record does not teach or suggest these limitations. Support for these limitations can be found in U.S. Patent 4,532,270 to Rossi et al., column 3, lines 24-30 and 53-56. U.S. Patent 4,532,270 is listed on page 19, lines 16-18, of the specification as originally filed and was incorporated by reference therein..". Applicant respectfully points out that the invention that the Applicant claims should be disclosed adequately and accurately. Merely citing Patents does not mean what is disclosed in the body of the patents cited is also the invention of the Applicant.

Claims 23, 24, 27 and 28 recite "organic adhesive" and "adhesive comprising dimethacrylate ester". Further review of the Specification/drawings do not mention this claimed subject matter.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica Carter can be reached on (571) 272-4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12/4/06

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